AMENDMENTS TO THE CLAIMS

A listing of the claims presented in this patent application appears below. This listing replaces all prior versions and listing of claims in this patent application.

Claim 1 (currently amended): A method for producing gas turbine fuel oil from feed oil with increased yields, comprising:

an atmospheric distillation step of subjecting crude oil acting as said feed oil to atmospheric distillation to separate said crude oil into light oil and atmospheric residue oil;

a first hydrotreating step of contacting the light oil produced in said atmospheric distillation step with pressurized hydrogen in the presence of a catalyst in a lump, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil;

a first separation step of separating said atmospheric residue oil into a light oil matter and a heavy oil matter;

said first separation step being selected from the group consisting of vacuum distillation, solvent deasphalting, thermal cracking and steam distillation; and

a second hydrotreating step of contacting the light oil matter produced in said first separation step with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil;

said refined oil produced in said first and second hydrotreating steps being the one and only product obtained and used as the gas turbine fuel oil;

the gas turbine fuel oil which is refined oil thus obtained in said first and second hydrotreating steps being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less and sulfur in an amount of 500 ppm or less, and being produced with yields of 65% or more based on said feed oil.

Claim 2 (previously presented): The method as defined in claim 1, wherein said first hydrotreating step and said second hydrotreating step are executed as a common step.

Claim 3 (Currently amended): A [[The]]method ~~as defined in claim 1, further comprising a second separation step of separating said heavy oil matter produced in said first separation step into a light oil matter and a heavy oil matter;~~ for producing gas turbine fuel oil from feed oil with increased yields, comprising:

an atmospheric distillation step of subjecting crude oil acting as said feed oil to atmospheric distillation to separate said crude oil into light oil and atmospheric residue oil;

a first hydrotreating step of contacting the light oil produced in said atmospheric distillation step with pressurized hydrogen in the presence of a catalyst in a lump, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil;

a first separation step of separating said atmospheric residue oil into a light oil matter and a heavy oil matter;

said first separation step being selected from the group consisting of vacuum distillation, solvent deasphalting, thermal cracking and steam distillation;

a second hydrotreating step of contacting the light oil matter produced in said first separation step with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil;

a second separation step of separating said heavy oil matter produced in said first separation step into a light oil matter and a heavy oil matter;

said second separation step being selected from the group consisting of solvent deasphalting and thermal cracking; and

a third hydrotreating step of contacting the [refining said] light oil matter produced in said second separation step with pressurized hydrogen in the presence of a catalyst, to thereby ~~obtain refined oil, which is~~ carry out an impurity removal treatment, resulting in obtaining refined oil;

said refined oil produced in said first, second and third hydrotreating steps being the one and only product obtained and used as the gas turbine fuel oil;

the gas turbine fuel oil which is refined oil thus obtained being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less, and sulfur in an amount of 500 ppm or less, and being produced with yields of 65% or more based on said feed oil.

Claim 4 (previously presented): The method as defined in claim 3, wherein at least two of said first, second and third hydrotreating steps are executed as a common step.

Claim 5 (currently amended): A [[The]] method ~~as defined in claim 1, further comprising~~ for producing gas turbine fuel oil from feed oil with increased yields, comprising:

an atmospheric distillation step of subjecting crude oil acting as said feed oil to atmospheric distillation to separate said crude oil into light oil and atmospheric residue oil;

a first hydrotreating step of contacting the light oil produced in said atmospheric distillation step with pressurized hydrogen in the presence of a catalyst in a lump, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil;

a first separation step of separating said atmospheric residue oil into a light oil matter and a heavy oil matter;

said first separation step being selected from the group consisting of vacuum distillation, solvent deasphalting, thermal cracking and steam distillation;

a second hydrotreating step of contacting the light oil matter produced in said first separation step with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil; and

a third hydrotreating step of contacting the heavy oil matter produced in said first separation step with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment and cracking a part of said heavy oil matter, resulting in obtaining refined oil and a heavy oil matter;

said refined oil produced in said first, second and third hydrotreating [[step]] steps being the one and only product obtained and used as the gas turbine fuel oil;

the gas turbine fuel oil which is refined oil thus obtained being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less, and sulfur in an amount of 500 ppm or less, and being produced with yields of 65% or more based on said feed oil.

Claim 6 (currently amended): A method for producing gas turbine fuel oil from feed oil with increased yields, comprising:

an atmospheric distillation step of subjecting crude oil acting as said feed oil to atmospheric distillation to separate said crude oil into light oil and atmospheric residue oil;

a first hydrotreating step of contacting the light oil produced in said atmospheric distillation step with pressurized hydrogen in the presence of a catalyst in a lump, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil; and

a second hydrotreating step of contacting said atmospheric residue oil with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment and cracking a part of a heavy oil matter, resulting in obtaining refined oil and a heavy oil matter;

said refined oil produced in said first and second hydrotreating steps being the one and only product obtained and used as the gas turbine fuel oil;

the gas turbine fuel oil which is refined oil thus obtained ~~in said first and second hydrotreating steps~~ being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less and sulfur in an amount of 500 ppm or less, and being produced with yields of 65% or more based on said feed oil.

Claim 7 (Currently amended): A [[The]] method ~~as defined in claim 6, further comprising~~ for producing gas turbine fuel oil from feed oil with increased yields, comprising:

an atmospheric distillation step of subjecting crude oil acting as said feed oil to atmospheric distillation to separate said crude oil into light oil and atmospheric residue oil;

a first hydrotreating step of contacting the light oil produced in said atmospheric distillation step with pressurized hydrogen in the presence of a catalyst in a lump, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil;

a second hydrotreating step of contacting said atmospheric residue oil with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment and cracking a part of a heavy oil matter, resulting in obtaining refined oil and a heavy oil matter;

a first separation step of separating said heavy oil matter produced in said second hydrotreating step into a light oil matter and a heavy oil matter; and

said first separation step being selected from the group consisting of vacuum distillation, solvent deasphalting and thermal cracking;

said refined oil produced in said first and second hydrotreating steps and said light oil matter produced in said first separation step being the one and only product obtained and used as the gas turbine fuel oil;

the gas turbine fuel oil which is refined oil thus obtained being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less and sulfur in an amount of 500 ppm or less, and being produced with yields of 65% or more based on said feed oil.

Claim 8 (previously presented): The method as defined in claim 1, wherein the gas turbine fuel oil is further subject to atmospheric distillation, to thereby provide light gas turbine fuel oil and heavy gas turbine fuel oil heavier than the light gas turbine fuel oil.

Claim 9 (previously presented): The method as defined in claim 1, wherein the heavy oil matter produced in the first separation step is used as fuel oil for a boiler.

Claim 10 (previously presented): The method as defined in claim 5, wherein said heavy oil matter produced in said third hydrotreating step is used as fuel oil for a boiler.

Claim 11 (previously presented): The method as defined in claim 1, wherein said feed oil is subject to a desalting treatment prior to said atmospheric distillation step.

Claim 12 (previously presented): The method as defined in claim 1, wherein said heavy oil matter produced on the basis of said feed oil is partially oxidized by oxygen to produce hydrogen, which is used in said hydrotreating steps.

Claim 13 (currently amended): A method for producing gas turbine fuel oil from feed oil with increased yields, comprising:

a first separation step of separating heavy feed oil consisting of atmospheric residue oil obtained by atmospheric distillation of crude oil and/or heavy oil into a light oil matter and a heavy oil matter;

said first separation step being selected from the group consisting of vacuum distillation, solvent deasphalting, thermal cracking and steam distillation; and

a first hydrotreating step of contacting said light oil matter produced in said first separation step with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil;

said refined oil produced in said first hydrotreating step being the one and only product obtained and used as the gas turbine fuel oil;

the gas turbine fuel oil which is refined oil thus obtained being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less and sulfur in an amount of 500 ppm or less, and being produced with yields of 40% or more based on said heavy feed oil.

Claim 14 (Currently amended): A [[The]] method ~~as defined n claim 13, further comprising~~ for producing gas turbine fuel oil from feed oil with increased yields, comprising:

a first separation step of separating heavy feed oil consisting of atmospheric residue oil obtained by atmospheric distillation of crude oil and/or heavy oil into a light oil matter and a heavy oil matter;

said first separation step being selected from the group consisting of vacuum distillation, solvent deasphalting, thermal cracking and steam distillation;

a first hydrotreating step of contacting said light oil matter produced in said first separation step with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil;

a second separation step of separating said heavy oil matter produced in said first separation step into a light oil matter and a heavy oil matter;

said second separation step being selected from the group consisting of solvent deasphalting and thermal cracking; and

a second hydrotreating step of contacting ~~refining~~ said light oil matter produced in said second separation step with pressurized hydrogen in the presence of a catalyst, to thereby ~~obtain refined oil, which~~ carry out an impurity removal treatment, resulting in obtaining refined oil;

said refined oil produced in said first and second hydrotreating steps being the one and only product obtained and used as the gas turbine fuel oil; and

the gas turbine fuel oil which is refined oil thus obtained being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less and sulfur in an amount of 500 ppm or less, and being produced with yields of 40% or more based on said heavy feed oil.

Claim 15 (currently amended): A [[The]] method ~~as defined in claim 13, further comprises~~ for producing gas turbine fuel oil from feed oil with increased yields, comprising:

a first separation step of separating heavy feed oil consisting of atmospheric residue oil obtained by atmospheric distillation of crude oil and/or heavy oil into a light oil matter and a heavy oil matter;

said first separation step being selected from the group consisting of vacuum distillation, solvent deasphalting, thermal cracking and steam distillation; and

a first hydrotreating step of contacting said light oil matter produced in said first separation step with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment, resulting in obtaining refined oil; and

a second hydrotreating step of contacting said heavy oil matter produced in said first separation step with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment and cracking a part of said heavy oil matter, resulting in obtaining refined oil and a heavy oil matter;

said refined oil produced in said first and second [[third]] hydrotreating [[step]] steps being the one and only product obtained and used as the gas turbine fuel oil; and

the gas turbine fuel oil which is refined oil thus obtained being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less and sulfur in an amount of 500 ppm or less, and being produced with yields of 40% or more based on said heavy feed oil.

Claim 16 (currently amended): A method for producing gas turbine fuel oil from feed oil with increased yields, comprising:

a hydrotreating step of contacting heavy feed oil consisting of atmospheric residue oil obtained by atmospheric distillation of crude oil and/or heavy oil with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment and cracking a part of a heavy oil matter, resulting in obtaining refined oil and a heavy oil matter;

said refined oil produced in said hydrotreating step being the one and only product obtained and used as the gas turbine fuel oil;

the gas turbine fuel oil which is refined oil thus obtained being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less and sulfur in an amount of 500 ppm or less, and being produced with yields of 40% or more based on said heavy feed oil.

Claim 17 (currently amended): A [[The]] method ~~as defined in claim 16, further comprising~~ for producing gas turbine fuel oil from feed oil with increased yields, comprising:

a hydrotreating step of contacting heavy feed oil consisting of atmospheric residue oil obtained by atmospheric distillation of crude oil and/or heavy oil with pressurized hydrogen in the presence of a catalyst, to thereby carry out an impurity removal treatment and cracking a part of a heavy oil matter, resulting in obtaining refined oil and a heavy oil matter;

a separation step of separating said heavy oil matter produced in said hydrotreating step into a light oil matter and a heavy oil matter; and

said separation step being selected from the group consisting of vacuum distillation, solvent deasphalting and thermal cracking;

said refined oil produced in said hydrotreating step and said light oil matter produced in said separation step being the one and only product obtained and used as the gas turbine fuel oil;

the gas turbine fuel oil which is refined oil thus obtained being 4 cSt or less in viscosity at 100°C, containing alkaline metal in an amount of 1 ppm or less, lead in an amount of 1 ppm or less, V in an amount of 0.5 ppm or less, Ca in an amount of 2 ppm or less and sulfur in an amount of 500 ppm or less, and being produced with yields of 40% or more based on said heavy feed oil.

Claims 18 and 19 (cancelled).

Claim 20 (previously presented): The method as defined in claim 3, wherein the heavy oil matter produced in the second separating step is used as fuel oil for a boiler.